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EXAMINER

TRUONG, CAMQUY

ART UNIT

PAPER NUMBER

2195

DATE MAILED: 06/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/970,452

Applicant(s)

QIU ET AL.

Examiner

Camquy Truong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 176-239 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 176-239 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2/15/02, 7/8/02.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Claims 176-239 are presented for examination.
2. It is noted that although the present application does contain line numbers in the specification and claims, the line numbers in the claims do not correspond to the preferred format. The preferred format is to number each line of every claim, with each claim beginning with line 1. For ease of reference by both the examiner and Applicant all future correspondence should include the recommended line numbering.
3. Examiner has not considered items C96 – C115 of IDS filed on 7/8/02. If applicant wants these information to be part of the specification as copending applications to this case, applicant should move all this information to the correct section (i.e. related/ copending application section) of the specification.
4. The cross reference related to the application cited in the specification must be updated (i.e. update the relevant status, with PTO serial numbers or patent numbers where appropriated, on page 1, lines 7-31 and page 2, lines 1-5). The entire specification should be revised.

### ***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

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F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 176, 201 and 221 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 176, 190 and 210 of copending application serial no: 09/970,457. Although the conflicting claims are not identical, they are not patentably distinct from each other because both computer systems comprise substantially the same elements. The differences between claim 1 of the application and this case are a wrapper and a scriptable language. It would have been obvious to one of ordinary skill in the art to use wrapper and scriptable language because wrapper is well known in the art for making the system platform independent by wrapping the different among different platforms. Therefore, they are not patentably distinct from each other.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

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7. Claims 176-239 are rejected under 35 U.S.C. 101 because they are directed to non-statutory subject matter.

8. Claims 176-239 are directed to method steps, which can be practiced mentally in conjunction with pen and paper, therefore they are directed to non-statutory subject matter. Specifically, as claimed, it is uncertain what performs each of the claimed method steps. Moreover, each of the claimed steps, monitoring and modeling can be practiced mentally in conjunctions with pen and paper. The claimed steps do not define a machine or computer implemented process (see MPEP 2106.1). Therefore, the claimed invention is directed to non-statutory subject matter. (The examiner suggests applicant to change "a method" to "a computerized method" (claims 176, 201 and 221) in the preamble to overcome the outstanding 35 U.S.C. 101 rejection).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

9. Claims 201-220 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. The following terms lack proper antecedent basis:

i. The logical volume level – claim 201.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 176-185, 198-205, 207-210, 221, 223-225 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff (U.S. Patent 6,185,601) in view of Goldszmidt et al (U.S. Patent 6,195,680 B1).

11. As to claim 176, Wolff teaches the invention substantially as claimed including: a method of modeling utilization of one or more I/O resources (abstract, lines 1-11), comprising monitoring one or more system I/O performance characteristics associated with said I/O resource (col. 2, lines 33-39), and modeling utilization of one or more of said I/O resources based at least in part on said monitored I/O system performance characteristics (col. 2, lines 41-51).

12. Wolff does not explicitly teach that a method of modeling of one or more I/O resources is in an information delivery environment. However, Goldszmidt teaches the information delivery environment (abstract, lines 1-11; Fig. 2-3).

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13. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Wolff and Goldszmidt because Goldszmidt's information delivery environment would increase the efficiency in Wolff's system by providing information delivery environment such as streaming can be used to deliver live audio and video data, where the clips arrive in streams so that user can begin to view or heard before the download is completed.

14. As to claim 177, Goldszmidt teaches information delivery environment comprises delivery of continuous media data to a plurality of viewers from an information management system (col. 2, lines 67-col. 3, line 4, and lines 15-16); and wherein said I/O resources comprise I/O capacity and buffer memory space of said information management system (col. 4, lines 40-42; col. 9, lines 35-41).

15. As to claim 178, Wolff teaches information management system comprises a storage system (118, cluster, Fig. 1a; Fig. 5a), said storage system including said I/O resources and having at least one storage device or at least one partitioned group of storage devices.(col. 60, line 60-col. 61, line 56).

16. As to claim 179, Wolff teaches method further comprises measuring a first value of at least one of said system I/O performance characteristics (col. 11, lines 24-40).

17. As to claim 180, Wolff teaches first value of at least one of said system I/O

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performance characteristics is measure by performing a storage device performance validation for said at least one storage device or at least one partitioned group of storage devices (Boolean True/ False, indicating if a specific volume is write enabled, col. 60, lines 19-55).

18. As to claims 181-182, Goldszmidt teaches at least one storage device or at least one partitioned group of storage devices comprises at least one storage disk drive or at least one partitioned group of storage disk drives (col. 9, lines 35-41); wherein said first and second measured values of said at least one of said system I/O performance characteristics comprises first and second measured values of total service time for said at least one storage device or at least one partitioned group of storage devices (col. 9, lines 9-11; col. 13, lines col. 13, lines 60-63); and wherein said detennined value of one or more of said system I/O performance characteristics using said first and second measured values of said at least one of said system I/O performance characteristics comprises a value of average access time, a value of transfer rate, or a combination thereof (col. 14, lines 9-19).

19. As to claim 183, Goldszmidt teaches information management system comprises a content delivery system coupled to a network (Fig. 3d; col. 9, lines 1-6 and col. 4, lines 40-41); and wherein said information delivery environment comprises delivery of continuous media data across said network from said content delivery system to said plurality of viewers (col. 2, line 67 – col. 3, line3).



20. As to claim 184, Goldszmidt teaches content delivery system comprises an endpoint content delivery system coupled to said network at an endpoint of said network (Fig. 3d; col. 9, lines 1-6 and col. 4, lines 40-41).

21. As to claim 185, Goldszmidt teaches storage system comprises at least two storage devices or two partitioned groups of storage devices (col. 9, lines 35-41); and wherein said one or more monitored system I/O performance characteristics comprise one or more system I/O performance characteristics at least partially reflective of workload distribution across said at least two storage devices or said at least two partitioned groups of storage devices (col. 5, lines 32-34 and lines 59-61).

22. As to claims 198 - 200, Goldszmidt teaches method further comprises validating an estimated value of at least one of said system I/O performance characteristics by comparing a first monitored value of at least one system I/O performance characteristic to the estimated value of said at least one system I/O performance characteristic (col. 9, lines 9-15).

23. As to claim 201, it is rejected for the same reason as claim 176. In addition, Goldszmidt teaches said I/O resource utilization at the logical volume level (virtual cluster, col. 5, lines 5-48).

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24. As to claim 202, it is rejected for the same reason as claim 177.

25. As to claim 203, Goldszmidt teaches monitoring of said I/O resource utilization comprises monitoring a workload of said at least one storage device or at least one partitioned group of storage devices at the logical volume level (col. 5, lines 32-34).

26. As to claim 204, Goldszmidt teaches monitoring of said I/O resource utilization comprises monitoring system I/O performance characteristics of said at least one storage device or at least one partitioned group of storage devices at the logical volume level (col. 2, lines 33-39; abstract, lines 1-11).

27. As to claim 205, Goldszmidt teaches monitoring of said I/O resource utilization comprises constantly monitoring a workload of said at least one storage device or at least one partitioned group of storage devices at the logical volume level during run-time of said storage system; and wherein said method further comprises deciding to accept or reject at least one new I/O request based at least in part on said monitored workload (col. 9, lines 7-20).

28. As to claim 207, it is rejected for the same reason as claims 177-178.

29. As to claim 208, it is rejected for the same reason as claim 183.

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30. As to claim 209, it is rejected for the same reason as claim 184.

31. As to claim 210, Goldszmidt teaches monitoring a workload distribution across said at least two storage devices or at least two partitioned groups of storage devices (col. 5, lines 32-34).

32. As to claim 221, it is rejected for the same reason as claims 202-203.

33. As to claim 223, it is rejected for the same reason as claim 177.

34. As to claim 224, it is rejected for the same reason as claim 183.

35. As to claim 225, it is rejected for the same reason as claim 184.

36. Claims 186-197, 206, 211-220, 222, 226-239 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolff (U.S. Patent 6,185,601) in view of Goldszmidt et al (U.S. Patent 6,195,680 B1), as applied as claims 176 and 201 above, and further in view of DE VOS (U.S. Patent Application Publication No. U.S.2003/0110505 A1).

37. As to claim 186, Goldszmidt teaches one or more monitored system I/O performance characteristics comprise at least one of maximal aggregate consumption

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rate for each of said at least two storage devices or partitioned groups of storage devices (col. 2, line 67-col. 3, line 21).

38. Wolff and Goldszmidt does not explicitly teach maximal aggregate number of viewers for each of said at least two storage devices or partitioned groups of storage devices, or a combination thereof. However, DE VOS teaches maximal aggregate number of viewers for each of said at least two storage devices or partitioned groups of storage devices (paragraph 50-51).

39. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Wolff, Goldszmidt and DEVOS because DE VOS's maximal aggregate number of viewers for each of said at least two storage devices would increase the flexibility of Wolff and Goldszmidt's system by providing the step of maximal aggregate number of viewer for each of at least two storage devices to prevent the system from overloading.

40. As to claim 187, Goldszmidt teaches managing one or more of said I/O resources for delivery of said continuous media data to said plurality of viewers based at least in part on said modeled utilization (col. 2, line 67- col. 3, line 3).

41. As to claims 188-189, Goldszmidt teaches managing comprises balancing said I/O capacity with said buffer memory space to ensure uninterrupted delivery of said

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continuous media data to said plurality of viewers from said at least two storage devices or said at least two partitioned groups of storage devices (col. 3, lines 15-21).

42. As to claim 190, Wollf teaches managing comprises setting a cycle time of said two or more storage devices or partitioned groups of storage devices to be greater than or equal to the maximal aggregate service time of said two or more storage devices or partitioned groups of storage devices (col. 11, lines 25-35).

43. As to claim 191, DE VOS teaches setting a cycle time of said two or more storage devices or partitioned groups of storage devices to maximize the number of simultaneous viewers of said continuous media data that is supported by said information management system (paragraph 50).

44. As to claim 192, Goldszmidt teaches allocating said I/O resources between background processing activities and delivery of said continuous media data (col. 17, lines 7-23).

45. As to claim 193, wolff teaches managing comprises at least one of performing I/O admission control, determining read-ahead size, or a combination thereof (col. 6, lines 21-50).

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46. As to claims 194-196, wolff teaches managing comprises performing said I/O admission control by monitoring the file system served from said at least one storage device or group of storage devices (col. 6, lines 21-28), and monitoring the data consumption rate of the stream (col. 9, lines 9-22); and determining whether or not a capacity of said system is sufficient to support at least one additional viewer based at least in part on said balancing of said I/O capacity (col. 9, lines 10-20).

47. DE VOS teaches balancing said I/O capacity with said buffer memory space (Fig.2, paragraph 49 and 85) based at least in part on said monitored number of existing viewers (paragraph 1).

48. As to claim 197, Goldszmidt teaches individual storage devices of said at lest two storage devices or partitioned groups of storage devices comprise storage disk.driver (col. 9, lines 35-41) and wherein said one or more monitored I/O system performance characteristics comprise at least one of seek and rotation latency, estimated transfer rate, or combination thereof (col.9, lines 9-11).

49. As to claim 206, it is rejected for the same reason as claim 186.

50. As to claim 211, it is rejected for the same reason as claim 186 and 206.

51. As to claims 212-213, they are rejected for the same reason as claim 189.

52. As to claim 214, it is rejected for the same reason as claim 188.
53. As to claims 215-216, it is rejected for the same reason as claims 177 and 202.
54. As to claims 217, it is rejected for the same reason as claim 189.
55. As to claim 218, it is rejected for the same reason as claim 194.
56. As to claim 219, it is rejected for the same reason as claim 195.
57. As to claim 220, it rejected for the same reason as claims 218-219.
58. As to claims 222, 226-229, Goldszmidt teaches said monitoring a number of outstanding I/O requests (a large number of incoming client agents) for at least a portion of each of said at least two storage devices or at least two partitioned groups of storage devices (col. 3, lines 12-55);
- Determining an estimated aggregated data consumption rate (monitoring the effective bit rate of the stream, col. 9, lines 6-22) for each of said at least two storage devices or at least two partitioned groups of storage devices storage devices or at least based at least in part on said estimated aggregated data consumption rate for said number of viewers being served by said at least a portion of each of said at least two

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storage devices or at least two partitioned groups of storage devices, and said monitored number of outstanding I/O requests for at least a portion of each of said at least two storage devices or at least two partitioned groups of storage devices (col. 8, lines 43-54).

DE VOS teaches monitoring a number of viewers (monitoring of the number of end device, paragraph 50, lines 14-16) being served by at least portion of each of said at least two storage devices or at least two portioned groups of storage devices, and monitoring the aggregated data consumption rates for said number of viewer being served by at least a portion of each of said at least two storage devices or at least two portioned groups of storage devices (determined based on certain statistics or real time monitoring of the number of end devices requesting the particular video and/ or audio program at a specific point in time, paragraph 50, 13-16; paragraph 50-51) .

59. As to claim 230, Goldszmidt teaches each storage devices comprise storage disk drivers (col. 9, lines 35-41).

60. As to claim 231, it is rejected for the same reason as claims 222, 226-229.

51. As to claims 232-133, it is rejected for the same reason as claims 194-196.

62. As to claims 234 - 237, they are rejected for the same reason as claims 193-196.



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63. As to claims 238 -239, Goldszmidt teaches logical monitoring comprises monitoring the following system V0 performance characteristics for each logical volume, for each plex within a logical volume, and for each storage device or partitioned group of storage devices within a plex:

(B) aggregated data consumption rate (col. 9, lines 7-22), (C) current weight of workload on a storage device in a plex (col. 5, lines 32-34), and (D) number of outstanding I/O requests for each storage device or partitioned group of storage devices (col. 3, lines 27-55);

DE VOS teaches:

A) total number of viewers (paragraph 50-51).

### ***Conclusion***

64. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (571) 272-3773. The examiner can normally be reached on 8AM – 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3756.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

Camquy Truong

May 18, 2005



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